ASWG Charter & Role

- NGST Scientific Goals & Metrics
  - Refine actual goals and put in DRM √
  - Refine DRM model assumptions √
  - Assist in developing scientific "metrics"
  - Recommend scientific "strategy" for achieving the balance between desires and feasibility
- Represent NGST and the Community Interests
  - Key meetings (Decade Survey, OSS) √
  - Community interests in science goals √

√ = actual studies and/or homework, otherwise advisory

ASWG Charter & Role Cont.

- NGST Observatory Development
  - Review and advise on ISIM studies √
  - Assess design concepts and implementation plans for their scientific impact.
  - Help in formulating an operating scenario for NGST. √
  - Advise and assist Project in formulating Project Plans and solicitation strategies.
  - Participate in various IPTs and study teams √
- Travel, travel, travel

Science Goals and Metrics

- Current DRM is shaped to HST & Beyond and ideal 6-m monolith in terms of capabilities.
  - 2.5 yr. core mission is *not* the GTO science program but represents a core science program to accomplish the OSS long-range goals, as *we* develop and present them.
  - Extended program should show potential of NGST but no single part should be a *show-stopper*.
  - The development and periodic modifications in the DRM must be done deliberately, in consultation with everyone!

Suggested Process

- ASWG members will represent astronomical disciplines/subfields.
  - Each subfield may develop a small working group to propose science goals and document them.
  - ASWG to prioritize each goal/observations in either core or extended program.
    - Each goal has a "roadmap."
    - Priorities based upon overall importance and NGST uniqueness.
  - New DRM leads to solicitation of flight ASWG & ISIM

Suggested Science Disciplines

- Early Universe -- the earliest stars, QSOs, reionization
- Cosmic evolution of the elements -- star formation -- SNe -- the early IGM
- The evolution of galaxies and galactic structure
- Central, dusty AGN and star-forming regions
- Stellar Populations
- Stellar Astrophysics and Evolution
- ISM
- Star formation: processes, populations, IMF etc.
- The formation of planets and planetary systems

Participate in Observatory Design

- Attend ISIM, Architecture & Mirror Demonstrator Reviews.
- Participate in IPTs, including Operability IPT.
- Raise issues at reviews and also at ASWG meetings
  - Action items or new studies
  - DRM model upgrade and study
- Perform specific technical studies that address impacts on scientific goals.

NGST

Suggested Technical Study Areas

ASWG
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- Image quality and its effects on science
- Detectors, what can we expect?
  - Formats, wavelengths, noise, stability
  - Electronic and thermal requirements.
- Backgrounds and their effects on science
  - Mike Hauser will permit use of COBE model
  - Other orbits besides L2
  - Cosmic rays and rejection techniques
- Data Archives and Analysis in the 21st Century

ASWG-approved Standards

Science

- Cosmology (Ω,Λ,H)
- Early star cluster
- Early Protogalaxy
- z = 4 early spheroid
- cold white dwarf
- old brown dwarf
- early protostar
- young Jupiter-sized planet
- Kuiper Belt Object.

Technical

- Zodiacal Background model.
- Reflectivities, noise estimates, etc. for Yardstick.
- Mirror temps, emissivity.
- Sky coverage
- GO usage: programs, times, etc.

NGST Census

- Piero Madau is working on NGST Census -- how many and what kinds of objects will we see?
- My early version looks interesting:

	Number in 4' x 4' Field	Reference
Galaxies (z < 5)	~10^5	Im & Stockman 1997
Protogalaxies (z > 10)	10^4	Haiman & Loeb 1997
AGN (z > 10, 10% active)	~10^2	Loeb 1997
Pop III cold white dwarfs	0.05-6	Liebert et al.1997
Jupiter-size Objects in Orion	2- 70	Beckwith 1997
Disk M Dwarfs	> 12	Gould et al 1997
Brown Dwarfs	~ 10	Werner et al. 1997
Type II SNe (z > 5)	~10 yr^{-1}	Miralda-Escude & Rees 1997
Protogalaxies (>100 nJy)	3	Haiman & Loeb 1997